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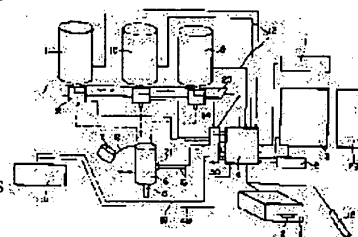
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## (54) METHOD AND DEVICE FOR DISPENSING AND MIXING OF MULTI-COMPONENT MATERIAL

(57)Abstract:

PURPOSE: To enable an unerring, prompt and uncomplicated mixture of tooth fillers different in composition and consistency by inputting in a computer controller, data concerning dispensing characteristics for material components pre-determined for a filling compound to be mixed, together with data concerning mixing characteristics of a mixing process.

CONSTITUTION: A device has dispensers 9-11 which store and adjust powdery material compositions and liquid ingredients different in color and composition composed dental cements and alloys, and the dispensers are connected to the input side of a computer 4 by way of signal line 13 for a filling-level-indication. Further, onto the input side of the computer 4, data storage-medium input station 1 for use in data on mixing characteristics stored in code cards, data storage device 2 which stores specific data of dispensing and mixing processes, a keyboard 3 for inputting individual datum and a signal line 19 which transmits the preparatory state of driving of a mixer to the computer 4, are connected.



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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to one or more sorts of the methods and equipment which little-\*\*\*\*\* and mix quantitatively mutually independently powdered and liquefied or the multicomponent material that consists of paste-like components, and the dental-filling material which makes a subject especially dental cement, an alloy and a composite, or its derivative.

[0002]

[Description of the Prior Art] Already, by \*\*\*\* with each exact component, reserve \*\*\*\* of the dental cement is carried out, it is offered, in that case, reserve \*\*\*\* of a powdered component and the liquefied component is carried out, and they exist as separate components in a mixed capsule. It is because a capsule portion is rotated mutually according to the advanced technology, or they are the side (Germany patent No. 2324296) or the back (the Germany patent application public presentation No. 3920531) to the mixing chamber of; capsule. [ whether it is because the liquid pad (Huessigkeitskissen) which touches the Germany patent application public presentation No. 3718326 is pressed, and ] Or a liquid pad is intentionally opened after activation of the material component performed by what broken through by the spike in which the liquid pad in the interior was attached by the ram (Germany patent No. 3723985), and a liquefied mixture component flows out into a mixing chamber after that. Then, the strong vibration for mixing a component for a capsule closely in an oscillating mixer is given. In order to discharge capsule contents from output port, an extractor is opened, the ram faced and prepared in output port is pushed inside a capsule, and mixture is discharged through an extraction nozzle after that. for this reason, \*\*\*\* containing a liquefied component -- further -- breaking through (Germany patent No. 23985) -- or you have to push the cage which has \*\*\*\* together with a ram In the Germany patent No. 2324296, difficulty does not exist between a ram, mixture, and an extraction nozzle.

[0003] As for these well-known mixture capsule that has an extraction nozzle, the liquid pad is always manufactured from multilayer material, and at least one layer has the fault of consisting of a metal, in that case. Therefore, a used capsule forms the processing difficult comfort which consists of a metal, plastics, and a restoration component.

[0004] The mutual powdered and mixing ratio of a liquefied component is decided correctly. This has the advantage that a mixed component exists at a rate specified by the manufacturer on the other hand. on the other hand, it cannot be alike, it cannot set, and a mixing ratio cannot be changed from a user side Since this must mix the same dental-filling cement in the often changed consistency and a different color, it is disadvantageous for the filler for the various purposes (for example, a lower filler), or cementation material in this limitation. However, in the case of the well-known capsule by which the manufacturer specifies the mutual rate of a mixed component, this is impossible.

[0005] In order to store the charge of an admixture which has various kinds, colors, and different mixed contents especially for a different large tooth cavity and the various purposes of use, the stock of a remarkable capsule is also required.

[0006] Furthermore, a well-known capsule can be used only once. Moreover, after dividing into each component after mixing a capsule, and cleaning a capsule, it is also impossible to carry out a reuse. It, that is, the foil pad which has a liquid component especially are because it is destroyed.

[0007] The well-known mixed capsule which has an extraction nozzle for cement must be activated in order to combine mutually the mixed component contained in the separate channel cover. Moreover, this mixed capsule is expensive by the manufacture and the restoration mechanism which make many processes the content.

[0008] However, a well-known mixed capsule also has the advantage that it can apply to the piece of processing which should put the mixed compound into a tooth cavity directly through an extraction nozzle, or should be carried out the cementation. Since it is easy to treat a mixed capsule and it is used for a patient, it is always fully clean.

[0009] Furthermore, the mixture and \*\*\*\* equipment for the mixed component of dental-filling material which enable mechanical \*\*\*\* of the dental material and mixture and which are driven mechanically are well-known (Germany patent Germany patent / No. 1288739 /; ] No. 1101692). However, these equipments are especially assumed for amalgam \*\*\*\*.

[0010] The \*\*\*\* does not have a problem in a row based on the fluidity of alloy filings based on the high specific gravity of mercury, and a suitably good fluidity. Furthermore, the mixing ratio of an alloy and mercury is always constancy comparatively. However, in manufacture of the dental-filling material in which dental cement is with a subject, these conditions are not given. Since the mixing ratio was developed to two material components which change slightly, well-known equipment does not have a control unit for \*\*\*\*(ing) and mixing a material component automatically, either.

Therefore, it can be used for mixing the dental-filling material which consists of a mutually different multicomponent material, and is 7, and this solution means is \*\*.

[0011] The Germany patent No. 1566287 and the Germany patent No. 2322681 propose \*\*\*\* and the mixed equipment for dental-filling material manufacture which are blended using the \*\*\*\* roll which has the locus which separated the mixed component and which consist of mercury and amalgam. Then, the \*\*\*\*(ed) amount of portions is introduced into the mixer tube through a hopper, and is introduced into a mixed capsule after that. In order to avoid unjust conditions, mixture and \*\*\*\* equipment can turn on a switch for the first time, when equipped with the mixed capsule.

[0012] In order to mix the dental-filling material which makes a subject dental cement which is needed for manufacture of a lower filler, a filler, and cementation material and which consists of some components, similarly this \*\*\*\* and mixed equipment cannot be used. On the other hand, an existing \*\*\*\* roll does not allow \*\*\*\* of multicomponent material. On the other hand, the dental cement in which a fluidity is inferior cannot flow through the comparatively long section which goes into a mixed capsule through the mixer tube from an inflow hopper then. All the inclination sections are based on the high adhesiveness of cement, and are polluted and blockaded after a short time. You have to clean thoroughly the equipment proposed in order to maintain correctly the mixing ratio of the material component which should be mixed with high operation safety and to guarantee required purity in a dentistry field after each mixed process.

[0013] The equipment which measures and \*\*\*\* the liquid for coloring automatically especially from the Germany patent application public presentation No. 2944869 is well-known. This equipment is used in order to manufacture a color-mixing object from the various fundamental colors which are stored into a respectively special container and prepared. The control and the surveillance of progress of a process and a function are performed by the computer. Simultaneously, the surveillance of equipment and a restoration process is given by indicating the data by the visual sense at a display. The characteristics-of-mixing data of \*\*\*\* of a color-mixing object are stored in a computer, and in order to reappear by the case later, they can take out a color constituent again.

[0014] In order to raise the productivity of \*\*\*\* and a mixed process, and in order to mitigate a worker's burden simultaneously, the process control unit which has process computers including the process control unit linked to an input unit, job-data storage, and the computer from the Germany patent application public presentation No. 3102611 and the Germany patent application public presentation No. 2431974 is well-known.

[0015] as for the solution means mentioned at the end, in the mixed constituent, remarkable large allowable deviation is allowed from the start -- it is related with a carpenter business-plant unexceptional Therefore, for \*\*\*\* exact to the altitude of a quantitative comparatively small constituent which consists of some components which are required in a dentistry field, this solution proposal cannot be applied or diverted to some other purpose.

[0016]

[Problem(s) to be Solved by the Invention] The dental-filling material of the different composition and the consistency which make a subject the dental cement for manufacturing a lower filler, a filler, and cementation material is mistaken, and there is no technical problem of this invention and it is proposing a solution means of the category mentioned to the beginning allowing the mixture which is not quick and complicated.

[0017]

[Means for Solving the Problem] This technical problem \*\*\*\* of a mutually different material component decided to be the restoration compound which should be mixed by this invention with the property data of the mixed process following \*\*\*\* It is based on a data carrier or as a code the property data of the color of a mixed compound in the initial complement of material, and the consistency row of material with a keyboard The amount which is inputted into the computer for control of mixture of dental-filling material, and \*\*\*\* equipment and by which the material component of; each was \*\*\*\*(ed) As compared with the data of the maximum permission consistency deflection memorized by the computer, the data computed in this way are attained into a mixed capsule powdered and by changing into the signal for controlling the means for \*\*\*\*(ing) and supplying a liquefied mixture component. The powdered and liquefied material component decided by the dental-filling compound which should be mixed is correctly \*\*\*\*(ed) using \*\*\*\* equipment, and is inserted in a single locus mixture capsule (Einraummischkapsel), after the ram combined with the main part of a capsule closes this capsule, it inserts into a mixer, especially an oscillating mixer, and the material component of each other is mixed based on the inputted characteristics-of-mixing data.

[0018] The characteristics-of-mixing data recorded on the data carrier, for example, a magnetic tape card, or the chip card may contain possible \*\*\*\* between the required information for combining various powdered components mutually and directions and/or one or more sorts of powdered material components, and one or more sorts of liquids.

[0019] Together with the characteristics-of-mixing data recorded on the data carrier, according to another feature of this invention, property data peculiar to operation of mixed equipment are inputted, and the best possible mixing time and mixed energy can be confirmed, and it can transmit to a mixer with control lead wire from the property data into which the predetermined conditions of the dental-filling compound which should be mixed by computer, and the mixed component were inputted.

[0020] or [ simplifying further the handicraft in the case of mixing a dental-filling compound ] -- or in order to make it easy, it is advantageous to input the restoration compound of an initial complement and its consistency by the data carrier together with the property data for \*\*\*\*(ing) and mixing a material component

[0021] Furthermore, mixer property data peculiar to the mixer type used most frequently can be written in data storage, and can be taken out with a keyboard at the time of the start of \*\*\*\* and a mixed process.

[0022] Another carried-out type makes it a summary to input these mixer property data into a process computer with a keyboard by hand. Desired process data can also be read to a process computer by the bar code other than the already mentioned magnetic tape card and a chip card.

[0023] The equipment by this invention for \*\*\*\*(ing) and mixing multicomponent material has a computer support control device, and the data storage and the input keyboard of threshold value which should not exceed the data input station for characteristics-of-mixing data memorized by the data carrier other than the signal line of the restoration level of each dispenser by which a powdered and liquefied material component is prepared, and the signal line of the operation preparatory state of a mixer, and a mixed component are connected to the input side of a computer in that case. The computer output side has connected with the control input of the control device for \*\*\*\* meanses of a mixed component, and an oscillating mixer through a process control unit.

[0024] The property data for \*\*\*\*(ing) and blending the material component which should be mixed inputted into the computer by the data carrier will be used for powdered and control of a shift bar equipped with \*\*\*\* opening into which a liquefied material component is introduced into the mixing chamber of a single locus mixture capsule, if this invention is caused like the 1st operative condition. For this reason, the single locus mixture capsule attached in means for supporting is positioned under maintenance of each dispenser. Advantageously, a shift bar is equipped with cam \*\*\*\*, when this cam \*\*\*\* arrives at the eccrisis position of a shift bar, vibration is caused in cooperation with the wave groove in the seat of the means for supporting of a dispenser, the amount of material which exists in \*\*\*\* opening by this is completely discharged into the mixing chamber of a single locus mixture capsule, and formation of the material bridge inside a dispenser which makes defluxion without failure of an accumulation object difficult is prevented.

[0025] Each tank for material components advantageously used as a dispenser simultaneously is equipped with the eccrisis slit adjustable in aperture within the limits of the side which faces a mixed capsule, and the material component stored by this is \*\*\*\*(ed). Because of the purpose which supports a \*\*\*\* process, a tank can be additionally vibrated during material eccrisis, and can also discharge and \*\*\*\* certainly and correctly the material component in which a fluidity is inferior by this.

[0026] operative condition with this invention equipment another [ the control signal determined by the process computer based on the characteristics-of-mixing data memorized by the data carrier ] -- like, more, the material component which should be mixed is \*\*\*\*(ed) and taken out, and in order to carry in into the mixing chamber of a single locus mixture capsule, it can be used because of control of the pipet arranged possible [ the adjustment and movement linked to the suction pump ]

[0027] A single locus mixture capsule has a surrounding groove within the limits of the restoration mouth of an end face, and is attached in the means for supporting which can be arranged possible [ movement ] in a fixed row by this groove. The mixing chamber of the single locus mixture capsule used for carrying in directly the packing material mixed by the outflow nozzle into the cavity as everyone knows is closed by the demarcation membrane to the tap hole of an outflow nozzle. In case this demarcation membrane extrudes the packing material mixed using the spike prepared in the ram, it is broken through, and the material mixed by pushing a ram further is extruded. In case the tap hole of an outflow nozzle extrudes the charge of an admixture, it is pushed, and it can also be closed using the spike which is subsequently removed by hand and in which drawing is possible.

[0028] The main part of a capsule of a single locus mixture capsule is advantageously equipped with the grip member which makes easy operation at the time of discharging the mixed material.

[0029] In case according to another feature of the proposed single locus mixture capsule the ram is equipped with the seal lip, the ram inserted in order that this seal lip might close a capsule, after mixing a material component in cooperation with the groove arranged at the capsule is fixed additionally and the mixed restoration compound takes out from a mixed capsule, \*\*s which escapes all over the back space of the ram back is prevented.

[0030] In the advantageous composition of the equipment by this invention, the protocol of control and a \*\*\*\* process is created and it is printed by the connected printer. on the other hand, be alike, set, and pass data lead wire in \*\*\*\* data -- it is also possible to transmit to the usual computer, to append \*\*\*\* data to a patient's data here, and to use always for \*\*\*\* treatment surveillance Thus, restoration and the cementation means of a large patient group and a large number can be grasped on a KOMPYU technical target, and can be evaluated statistically easily.

[0031] If the proposed solution means is used, dental-cement material of arbitrary composition can be made into a subject, the dental-filling material which has a different consistency and a different color can be manufactured with an advantageous mixing ratio from a different material component each time depending on the purpose of use, and the worker is exempted from the additional work for gathering a data input and data peculiar to required mixture in that case. In this way, each error at the time of preparing dental-filling material is eliminated completely, and high quality is secured. If the proposed solution means is used, each material component will be \*\*\*\*(ed) correctly separately, and structure is easy, and after cleaning suitably, it will feed into the single locus mixture capsule which can carry out a reuse, and will be mutually mixed violently with the mixed data confirmed correctly. in order to inspect a \*\*\*\* process correctly -- restoration of mixture -- a weight -- inspecting -- that time -- a gravimetry value -- sequence -- it is inputted into a computer as a contrast value of the right \*\*\*\* process, and a regulation operation is carried out to a control unit

[0032] Since human being's eyes were very difficult to commit an error in the case of judgment of a color, and to judge the brightness of an objective front face, a color tone, and the saturation ratio of coloring objective especially in especially different lighting, the property of these colors was measured objective absolutely and the color gaging system indicated as a solid coordinate was developed. The former was impossible for changing suitably in the case of selection of the obtained

result of a plastic packing material. Possibility of preparing by hand the filler mixture which is in agreement with a measurement result within it, that is, the directed short paddle time is because it did not exist. This is successful for the first time using the method by this invention, and the equipment by this invention. The brightness of the obtained tooth or the tooth which has faced each other, for example and which is not destroyed, or the adjoining dentistry restoration section, a color tone, and the measured value about the saturation ratio of coloring can be measured objective for example, with a LAB system with a color measurement probe, and it can convert correctly by the process computer, and can change into the signal for controlling \*\*\*\* equipment directly.

[0033] In this case, a process computer can correct brightness and the value of a color tone in consideration of the deflection about the saturation ratio of the color which originates in material rather (using and taking into consideration the well-known opacity of the packing material which should \*\*\*\*). According to the well-known technical level, the process of this computer cannot be conventionally changed, when mixing by the hand.

[0034] It is because it is a well-known phenomenon in the dental material which makes cement a subject especially that light-colored restoration is obtained too much based on it, that is, the "proper" high opacity of material in spite of selection of a color. This effect can decrease to the grade \*\* is already accepted to be for light color-ization hardly at all by correction of the color by the computer again in the case of observation of the completed restoration, either.

[0035] In the continuing carried-out type, a process computer estimates the measurement result of color measurement in consideration of the entry of data about a color, some layers which should prepare restoration mixture continuously rather are confirmed, and a worker is shown. Therefore, an approximate filler can be extremely prepared in the appearance image of Shinsei of a tooth.

[0036]

[Example] Below, this invention is explained in full detail per example.

[0037] A liquefied material component is stored in the powdered material component row from which the color and composition to which the equipment for \*\*\*\*(ing) and mixing multicomponent material roughly shown in drawing 1 considers dental cement and an alloy as a subject differ, and has some dispensers 9; 10; 11 prepared in it. Each dispenser 9; 10; 11 is inserted by the screw-thread combination 52 (view 2) into means for supporting 12, and is connected to the input side of a computer 4 by the signal line 13 for restoration level directions. Since [ which holds powdered and a liquefied mixture component ] the single locus mixture capsule 5 which the dispenser 9; 10; 11 is arranged with means for supporting 12 at stationing, and is inserted in means for supporting 21 was \*\*\*\*(ed) by the well-known method in the 1st carried-out type of this invention depending on (it does not illustrate) and the dental-filling compound which should be mixed, it is moved to each dispenser 9-11. Instead, with the means for supporting 21, in accordance with stationing, i.e., the inputted characteristics-of-mixing data, it can arrange fixed, and for example, using circular table equipment, it is made to move to up to the single locus mixture capsule 5 arranged at stationing, the single locus mixture capsule 5 also \*\*\*\* a desired material component, and each dispenser 9; 10; 11 carries it into a mixing chamber.

[0038] The signal line 19 which transmits the operation preparatory state of the keyboard 3 for the data storage for memorizing the fixed data of the data carrier input station for characteristics-of-mixing data which the code card, for example, the magnetic tape card, or chip card other than the signal line 13 of restoration level was made to memorize, \*\*\*\*, and a mixed process, and each data input, and a mixer 15, for example, an oscillating mixer, to a computer 4 is connected to the input side of a process computer. In order to make easy mixture and a \*\*\*\* entry of data, the bar code reader 18 is additionally formed in the data-input-station 2 side for code cards.

[0039] The property data peculiar to mixture with which the composition of material for the cementation of the cavity for forming the following restoration and restoration and a consistency differ from a color are memorized by the code card, and are inputted into a computer 4 by data input station 2. In this memorized data (Vorgabe), i.e., the data memorized by data storage 4, for example, the efficiency data of the connected oscillating mixer 15, and a computer 4, the best possible mixing time and mixed energy are confirmed from the information on an amount over the required restoration compound inputted by the keyboard 3. Simultaneously, these data are compared with the maximum tolerance value about composition of the material component which was memorized in data storage 2 and which should be mixed. The inputted data are displayed optically once again by the dispenser 17 connected to the computer, and it can correct or supplement with them by the case.

[0040] The characteristic data of each restoration compound which were confirmed by computer 4 on the basis of the memorized data and which should be mixed separately are changed into a control signal, and are transmitted to the \*\*\*\* equipment of a dispenser 9; 10; 11, the pointing device of the single locus mixture capsule 5, and the oscillating mixer 15 through the process control unit 50 and the control line 14; 16; 19. After being filled up with a liquefied material component into the single locus mixture capsule 5, this capsule is closed by powdered and the ram 7 in which link connection is carried out to the main part of a capsule by the deflection combination 8 which were \*\*\*\*(ed), and is inserted in into the hold fork of the oscillating mixer 15 for intense mixture of a material component.

[0041] In order to guarantee each \*\*\*\* and to use the advantage of capsule mixture and an application system simultaneously, the mixed capsule 5 which was opened completely, which was prepared in the end face 53 which can be closed with a ram 7, and the field which faces and which flows out and has a nozzle 6 is used (view 4). This mixed capsule 5 only consists of a mixing chamber 41 of one \*\*, and does not have the other channel cover. The mixing chamber 41 of the mixed capsule 5 is closed by the demarcation membrane 46 by the case to the opening 48 of the outflow nozzle 6. In this way, the mixture component between \*\*\*\* and/or mixed processes deposits in opening 48, and keeping away from a mixed process in this way is prevented. When pushing the ram 7 inserted into the mixed capsule, a demarcation membrane 46 is broken through by the

spike 40 which exists in a ram, and the mixed restoration compound which exists in a mixing chamber 41 succeeding flows out without being barred, is taken out from a capsule through the opening 48 of a nozzle 6, and is put in into the cavity with which it should be filled up. With another carried-out type, opening 48 is closed by the pin-like insertion 45, and this insertion is introduced into opening 48 with fitting firm enough in order to prevent automatic defluxion. In the case of taking out of the mixed restoration compound, insertion 45 is pulled out for the time being to the grade which can be sampled by hand. Then, the eccentricity by which a restoration compound is not barred is guaranteed. Furthermore, the ram 7 which can be inserted into a mixed capsule is equipped with the seal lip 54, in case this seal lip inserts a ram 7 into a capsule 5, it is engaged into the inside radial groove 55, and it fixes a ram 7 to possible slipping down from a capsule 5. It prevents simultaneously that a seal lip 54 will pass the ram side with which the mixed material moves forward, will be discharged at the posterior part of the mixed capsule 5, and will not be extruded through the outflow nozzle 6. The outside groove 43 formed of the outflow slant face 42 is formed, and in order to position the single locus mixture capsule 5 between \*\*\*\* processes into this groove, the peg 27 of the arm 22 of means for supporting 21 engages with the outer wall of a mixed capsule. Furthermore, a groove 43 is used in order to equip with the exhaust which pushes the inserted ram 7 and makes eccentricity of the mixed restoration compound easy. It holds for making easy advantageously the handling of the mixed capsule 5 by this invention in the lower part of the groove 43 formed of the outflow slant face 42, and the member 47 is formed in it.

[0042] The manufacture is also remarkably simple for the single locus mixture capsule 5 conventionally proposed to the well-known capsule for which it has an exhaust nozzle in the structure row, and it is advantageous in price. The detached core for forming a channel cover in a capsule is completely unnecessary. Furthermore, anchoring of a foil lip is omissible. A reuse can be presented with it, after it cleans thoroughly the mixture capsule after discharging the mixed restoration compound completely and it attaches each capsule parts. When giving up the reuse of the proposed single locus mixture capsule 5, this capsule can be canceled easily.

[0043] The dispenser 9 for storing a powdered material component is \*\*\*\*ed also to stationing into the means for supporting 12 which can be arranged also movable, and is inserted in it by combination 52 so that clearly from drawing 2 . the tap hole 28 which means for supporting 12 flow into a bottom side, and has a hole -- having -- this outflow -- the hole is open for free passage with \*\*\*\*\* 25 in the movable shift bar 20 Means for supporting 21 exist under the shift bar 20, and the single locus mixture capsule 5 with which the support arm 22 should be filled up is supported. Means for supporting 21 have an inhalant canal 29, and the amount of material \*\*\*\*(ed) by this pipe using \*\*\*\*\* 25 in the shift bar 20 is discharged into the single locus mixture capsule 5. As mentioned already, means for supporting 21 can be arranged to stationing, when it arranges movable when the dispenser 9; 10; 11 is positioned by stationing, and the dispenser is arranged movable. During the notch of means for supporting 21, the spring 23 which pushes the shift bar 20 against a part for the bottom flank of means for supporting 21 is formed. Furthermore, the shift bar 20 equips an end with cam \*\*\*\* 24, and vibration is caused, in order that this cam \*\*\*\* may guarantee perfect eccentricity of the powdered material which exists in \*\*\*\*\* 25, when the shift bar 20 arrives at an eccentric position in cooperation with the wave groove 26 in a part for the pars basilaris ossis occipitalis of means for supporting 12. If adhesive cement powder had no mechanical work, it adhered and remained in \*\*\*\*\* 25 easily, and thereby, the cause and bird clapper of failure of a \*\*\*\* process made it clear. Furthermore, although vibration caused by the synergism of cam \*\*\*\* 24 and the wave groove 26 prevents that a material bridge forms in a dispenser 9, \*\*\*\* without failure of the material to the inside of a tap hole 28 is prevented by this formation, and it deals in it by it. Regulation of the shift bar 20 for discharging the material which exists in \*\*\*\*\* 25, and return in a start position are performed by the process control unit 50 based on the data which were inputted and were confirmed by computer 4 using a well-known means.

[0044] Another means to fill up the single locus mixture capsule 5 with the amount of material \*\*\*\*(ed) correctly separately is shown in drawing 3 , and drawing of a material component and restoration into the single locus mixture capsule 5 of that are performed using pipet equipment in this case. Powdered and the pipet 34 used in order to \*\*\*\* and supply a liquefied material component are attached in means for supporting 36, and is movable along with a rail 35 in the level surface in a vertical plane row. The material component which should be held based on the inputted data is \*\*\*\*(ed) using a suction pump 37, this pump is connected with the process control unit 50 through the control line 38, and the pipet 34 is connected to this pump by the flexible pipe 39. A powdered and liquefied material component is again stored into dispensers 30 and 31 and 32, in order that a pipet 34 may hold the material of the amount of requests into these dispensers, it is inserted, and it \*\*\*\* and holds using a suction pump, and after a desired material component moves to up to the single locus mixture capsule 5 by which the end face 53 opened the pipet, it is carried in into a mixing chamber 41. Control of pipet movement is performed by the process control unit 50 similarly controlled by the computer 4.

[0045] The dispenser of a FUREKIMBURU wall is also especially suitable, this dispenser equips the method part of the lowest with the slit, a slit is opened and closed by mechanically different width of face in that case, and a mixed component is made to exercise by striking the lateral surface of \*\*\*\* equipment rhythmically simultaneously for powder \*\*\*\*. Adhesive powder can also be precisely \*\*\*\*(ed) by this.

[0046] : which explains a \*\*\*\* process by the example below -- it has at least five storage and a \*\*\*\* part to a powdered material component, and liquefied and/or the \*\*\*\* equipment by this invention which has two storage and a \*\*\*\* part to a paste-like material component are given

[0047] The manufacture of a restoration compound which has an average consistency in a color A and an amount I is required.

[0048] A color A consists of powder components 1 (30%), 2 (10%), 3 (50%), 4 (8%), and 5 (2%), as inputted into storage. The data with which the degree was memorized exist about \*\*\*\* of powder and a liquid. : Consistency : Liquid Body

Common \*\* \*\* Body \*\*\*\*\* (weight section) (Powder pair liquid) A component 1 1:5. 5 1:4.3 1:2. 3 A component 2 1:5. 5 1:4. 3 1:2. 3 Component 3 1:4. 8 1:3. 9 1:2. 0 Component 4 1:2.9 1:2.1 1:1.1 Component 5 1:5.51:4.3 1:2.3 Components 1-3 are always mixed with a liquid 1, and components 4 and 5 are always mixed with a liquid 2. A liquid 1 and the liquid 2 of each other are mixable in a mixed capsule. Compatibility exists among all the liquids and powder that were used. Cognition is possible for this situation combining the data memorized from mixture property data about the computer.

[0049] The information about sufficient restoration of the storage part concerned and its tank exists in a computer by the restoration level signal line. These information can be acquired also about drawing preceded from the last new restoration.

[0050] When this equipment was attached, \*\*\*\*\* to each component was inputted into the computer, and was made to memorize together with the change and the storage part of a color in \*\*\*\* equipment.

[0051] For example, it is :1 as which the following were determined as an amount inputted into the computer by data storage. Powder It is Addition II about the liquid of 400mg and a considerable amount. Powder It is Addition III about 600mg and a liquid. Powder An addition \*\*\*\* process passes 800mg and a liquid as follows, and the sequence of a powder component is not worth serious consideration in that case.

[0052]

Component 1: 120mg component 2: 40mg component 3: 200mg component 4: 32mg component 5: Restoration of 8mg mixture capsule is investigated about each restoration component each time.

[0053] The stored data "an average" of a consistency, and the :liquid 1 with which restoration is computed together from \*\*\*\*\* 120mgx4.340mgx4.3200mgx3.9 average comparatively : 1:4. The amount of powder which should be included 077 times : The amount of liquids (1) which should be introduced 360mg : 1467. 99mg liquids 2 32mgx2.18mgx4.3 average comparatively : 1:4. The amount of powder which should be included 064 times: The amount of liquids which should be introduced 40mg (2): The amount of 162.56mg solid stowing: Calculation of 2030.55mg mixing time: To a liquid 1, the optimal mixing time for 10 seconds is adopted. To a liquid 2, this mixing time is 6 seconds. Since most mixing time is needed for the dissolution process which passes in advance of sufficient mixture, as mixing time, the longest mixing time of an independent component is always given. In this case, mixing time is 10 seconds. When mixing separately, this information is displayed on a worker on a display. An integrated mixer is controlled suitably.

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[Translation done.]



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**CLAIMS**


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**[Claim(s)]**

[Claim 1] Multicomponent material and the tooth filler which makes dental cement, an alloy, and complex a subject especially are \*\*\*\*(ed) and mixed. In the method of \*\*\*\*(ing) using a data carrier or a code in order to reach and to control \*\*\*\* and the mixed process of the charge of dentistry technical material, and the material component which should be especially filled up with ceramic powder and the charge of a compounding agent into a single locus mixture capsule The \*\*\*\* property data including the information about a maximum-permissible-dose ratio and possible \*\*\*\*\* of a material component decisive to the restoration compound which should be mixed In case a storage part is loaded with mixture, together with the characteristics-of-mixing data of the following mixed process in a data carrier or code The memorized data about a kind including the amount of the compound which should be mixed, and the consistency of a compound which should be mixed In order to control the equipment which \*\*\*\* and mixes a tooth filler by the keyboard or the bar code Input into a computer, compute the loadings of; material component from the data and the above-mentioned input which were memorized, and it changes into powdered and liquefied, or the signal that controls a means to \*\*\*\* and supply a paste-like mixture component into a mixing chamber or a mixed capsule. How to \*\*\*\* and mix the multicomponent material characterized by mixing mutually based on the characteristics-of-mixing data into which the material which exists in a mixed capsule or a mixing chamber was computed or inputted after closing a capsule in the case of a mixed capsule.

[Claim 2] It is the method according to claim 1 characterized by changing into the signal which inputs the sexual desire news of the compound which should be mixed by the character code and numeric code, computes a computer depending on the amount of requests and request consistency of a compound which should mix powder and liquefied or \*\*\*\*\* which needs a different mixture component for the bottom of evaluation of charge of the storage part of a paste-like component in that case, and controls a \*\*\*\* means.

[Claim 3] The method according to claim 1 or 2 characterized by inputting by the data carrier which also contains the data about mixing time and a mixed period by the case together with data [ as opposed to \*\*\*\* of a material component for the restoration compound needed and its consistency ].

[Claim 4] A method given [ to the claims 1-3 characterized by making a data carrier support the mixing ratio of powder and a liquid and a different kind, coloring, and the information about the compatibility of a manufacturer's packing material, and taking out by computer for control of \*\*\*\* equipment ] in any 1 term.

[Claim 5] Supervise \*\*\*\* of a mixed component with a weight and a part for \*\*\*\*\* of the mixed component of each each time / that ] is measured between \*\*\*\*. The mutual ratio of a powder component and a liquid component from the amount of a powdered component, and the coefficient of the powder and liquid at [ the ] every powdered component A method given to the claims 1-4 characterized by inputting into a computer the measurement result of the amount with which it computed in consideration of the consistency of the request into which \*\*\*\* property data peculiar to material and the mixed compound were inputted, and each mixture was already filled up ] in any 1 term.

[Claim 6] The method according to claim 5 characterized by performing \*\*\*\* of a component by the volumetry.

[Claim 7] A method given [ to the claims 1-5 characterized by creating the record about performed \*\*\*\*, printing this alternatively, or guiding to a separate computer by data transmission, and appending the data about \*\*\*\* and a mixing ratio, and the data about the used batch to a patient's data in that case ] in any 1 term.

[Claim 8] A method given [ to the claims 1-7 characterized by converting into the signal which confirms by the color measuring device of the electron by which the data about the sexual desire news of the compound which should be mixed were connected with equipment by the data line, and controls a \*\*\*\* means directly in a process computer ] in any 1 term.

[Claim 9] It is the method according to claim 8 which inputs into a process computer with a keyboard the color number confirmed by the color measuring device, and is characterized by defining sexual desire news as a numeric value of the saturation ratio of the brightness of a color, a color tone, and/or a color in that case.

[Claim 10] The method according to claim 8 or 9 characterized by computing the layer which should be prepared in sequential [ of the individual restoration mixture which has the saturation ratio of the brightness which changes with computers, a color tone, and a color / some ], and showing a worker in order to reproduce the measured color number.

[Claim 11] Powdered and liquefied, or the dispenser for storing and distributing a paste-like material component, The \*\*\*\* equipment for carrying out little \*\*\*\*\* of the desired mixed component independently quantitatively mutually which furthermore operates by computer support control, In the equipment which \*\*\*\* and mixes the multicomponent material which consists of the integration or the separate oscillating mixer which mixes violently the material component inserted in

into the mixed capsule which has the ram in which an exhaust port and movement are still more possible To the input side of the computer (4) of a control device, besides the restoration level signal line of a dispenser (9, 10, 11), and the operation preparation signal line (19) of a mixer (15) The data input station peculiar to mixture for data which the data carrier memorized or should be inputted in code (1), The data storage peculiar to mixture in the threshold value row which must not exceed a mixed component for calculation data (2), Furthermore, the signal output of an input keyboard (3) and a control scale is connected. The output of a computer is connected with the means for \*\*\*\*(ing) a mixed component, and the process control unit for control (50) of a mixer (15). All the mixed components of a desired restoration compound are introduced into the mixing chamber (41) of a single locus mixture capsule (5) from a storage container through the open end face (53) in that case. A single locus mixture capsule (5) is equipment which \*\*\*\* and mixes the component material characterized by the ability to be closed down with the ram (7) which is used also as a delivery ram for discharging a capsule simultaneously after \*\*\*\* restoration of a mixed component, and which can be pushed.

[Claim 12] Equipment according to claim 11 characterized by data peculiar to mixture required for manufacture of a restoration compound being memorized by the magnetic tape card or the chip card.

[Claim 13] Equipment according to claim 11 characterized by data peculiar to mixture being read by data storage (2) in accordance with charge of a storage part (9-11) by numeric code.

[Claim 14] Equipment according to claim 11 characterized by data required for manufacture of a restoration compound being inputted by the bar-code reader.

[Claim 15] A liquefied material component is equipment according to claim 11 or 14 characterized by \*\*\*\*(ing) with the pipet (34) combined with the suction pump or the \*\*\*\* nose of cam, and being inserted in into the mixing chamber (41) of a single locus mixture capsule (5).

[Claim 16] It is equipment according to claim 11 which the means for \*\*\*\*(ing) the material component which should be mixed includes a shift bar (20) equipped with \*\*\*\*\* (25), and is characterized by equipping this shift bar with cam \*\*\*\* (24) in which vibration is caused in cooperation with the wave groove (26) which exists in means for supporting (12) when a bar arrives at an eccrisis position.

[Claim 17] Equipment given [ to the claims 11-16 characterized by making it vibrate while having and \*\*\*\*(ing) the eccrisis slit which has the aperture which can control the tank used as a dispenser (9, 10, 11), and getting ] in any 1 term.

[Claim 18] A shift bar (20) is equipment according to claim 11 or 16 which is supported possible [ movement into the means for supporting of a dispenser (9, 10, 11) ], and is characterized by positioning the single locus mixture capsule (5) between the support arms (22) of means for supporting (21) in the lower part of an inhalant canal (29).

[Claim 19] The mixing chamber (41) of a single locus mixture capsule (5) is equipment according to claim 11 characterized by closing down the demarcation membrane broken through by the spike (40) attached in the ram between eccrisis processes (7) to an outflow nozzle (6), and for a ram (7) bending to a mixed capsule (5), and carrying out link connection with the joint object (8).

[Claim 20] A single locus mixture capsule is equipment according to claim 11 or 18 characterized by having a surrounding groove (43) or a grip member (47) within the limits of the open end face.

[Claim 21] Equipment according to claim 11, 18, or 19 characterized by opening (48) of an outflow nozzle (6) being closed by the pin-like insertion (45).

[Claim 22] A ram (7) is equipment according to claim 11, 18, or 20 characterized by having the seal lip (54) which cooperates with the radial groove (55) in a single locus mixture capsule (5).

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[Translation done.]

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The schematic diagram of the equipment which \*\*\*\* and mixes multicomponent material.

[Drawing 2] The instantiation-cross section of the dispenser for preparing a powdered material component.

[Drawing 3] The schematic diagram of the equipment which carries in the material component \*\*\*\*(ed) by pipet pouring into the mixed capsule.

[Drawing 4] The cross section showing the desirable composition of a single locus mixture capsule.

[Drawing 5] \*\*\*\* by this invention, and the block connection diagram of mixed equipment.

[Description of Notations]

1 Data Carrier Input Station

2 Data Storage

3 Keyboard

4 Computer

5 Single Locus Mixture Capsule

6 Outflow Nozzle

7 Ram

8 Deflection Joint Object

9, 10, 11 Dispenser

12 Means for Supporting

13 Signal Line

14, 16, 19 Control line

15 Oscillating Mixer

18 Bar Code Reader

20 Shift Bar

21 Means for Supporting

22 Support Arm

23 Spring

24 Cam \*\*\*\*

25 \*\*\*\*\*

26 Wave Groove

27 Click

28 Tap Hole

29 Inhalant Canal

30, 31, 32 Dispenser

34 Pipet

35 Rail

36 Means for Supporting

37 Suction Pump

38 Control Line

39 Deflection Union

41 Mixing Chamber

42 Slant Face

43 Groove

45 Insertion

46 Demarcation Membrane

47 Hold and it is Member.

48 Opening

53 End Face

54 Seal Lip

55 Inside Groove

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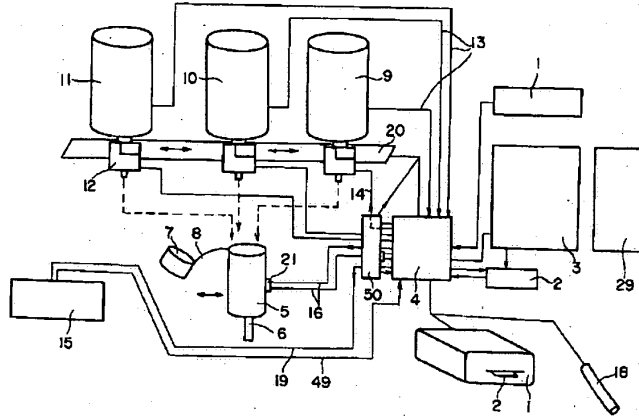
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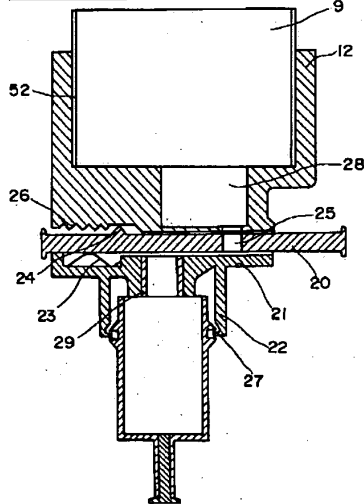
DRAWINGS

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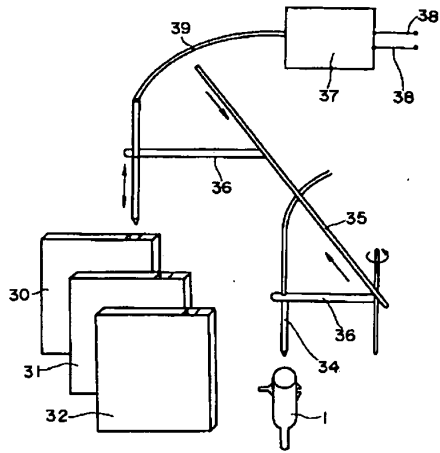
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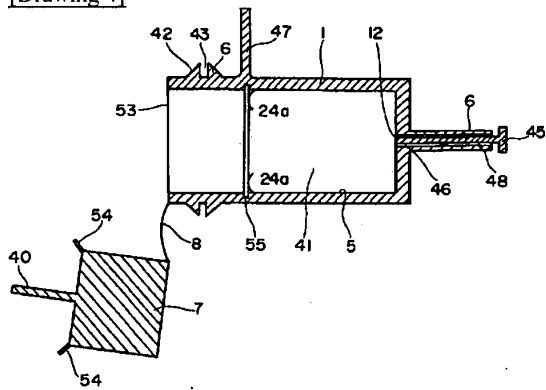
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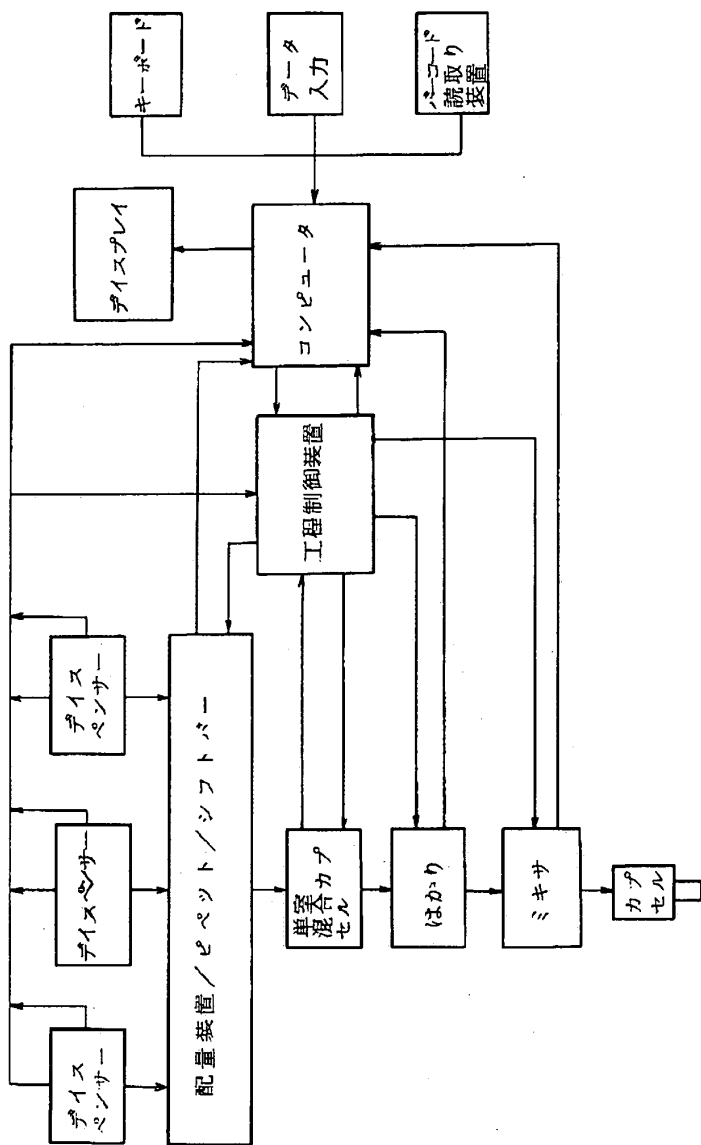
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]